

European mosses coincide. But Mr. Wilson, whose observations on this tribe are always as original as acute, has long since taught Dr. Taylor that the scabrous state of the pedicel in this species is liable to great variation; insomuch that he seems disposed to doubt if *Hypnum vagans* of Hooker in Drummond's 'Musci Americani,' separated principally on account of the smoothness of its fruit-stalks, be really distinct from *Hypnum rutabulum* (L.).

Among the very few lichens sent by Dr. Watson is a species of *Cenomyce* which may be considered new, and called *Cenomyce foliacea*. Its specific character may be thus given:—

“Podetia two inches high, loosely cæspitose, dichotomously branched, the ultimate branches subulate and tipped with brown; the buds in flattened, granular, pale green elevations of the cuticle, soon expanding into flat lobes which are subpinnately branched and crenate, pale glaucous above, snow-white beneath, unaltered by moisture. There were no apothecia present.”

The generic name is that of Acharius, which perhaps should not be abandoned but upon the clearest necessity. The modern subdivision of this genus into *Cladonia* and *Scyphophorus* appears attended with no advantage, while the species of these two tribes are, by the confession of the adopters themselves, joined by links that appear inseparable from either set. Indeed on this question the present plant is quite in point, having all the habit of *Cenomyce sparassa* (Ach.), (*Scyphophorus* of Fée and of DeCandolle), with the attenuated and subulate branches of *Cladonia* (of the same authors).

The buds of lichens have not received the consideration from botanists which their importance merits.

Hitherto the characters have been drawn from the *thallus* or from the *apothecia* alone; but the buds by which, for the most part, these plants are multiplied, and which, if watched during development, present most remarkable features, should be hailed as a new and welcome element for specific distinctions.

In *Cenomyce sparassa* (Ach.) the buds originate in coarse white granules, thickly set and rising at once above the surface of the *podetia*; in our plant they are flat, scarcely eminent above the cuticle of the *podetia*, pale glaucous green from the beginning, and not so densely crowded, nor do they expand into lobes so linear. Another character may be taken from the branches of the *podetia*, which in the former are nearly parallel and of equal thickness except at the very summit, while in *Cenomyce foliacea* they are more gradually acuminate and divaricated above.

MISCELLANEOUS.

GRIFFITHSIA SIMPLICIFILUM, AGARDH.

THIS species of Alga, which has not been noticed as occurring on any part of the coast of Great Britain, was found plentifully by Mr. R. Ball and myself at Freshwater bay, in the Isle of Wight, on the 7th of August 1841. The species has a place in the British cata-

logue from specimens obtained by Mr. Harvey in the county of Wicklow, in Ireland, and there only. It is a native of the coast of France.—W. M. THOMPSON (Belfast).

ITALIAN FIRE-FLY IN NORFOLK.

To the Editors of the Annals of Natural History.

Swaffham, Norfolk, Sept. 7, 1843.

GENTLEMEN,—I wish, through the medium of your valuable publication, to make known a circumstance which, as far as I can learn, has been hitherto unnoticed in England. On going into my greenhouse between seven and eight o'clock in the evening of the 22nd of August, I was surprised at perceiving a glimmering light amongst the vines, which, on further observation, I discovered to proceed from a "lucciola," or Italian Fire-fly, with whose habits and appearance a long residence in Italy has rendered me familiar. Although the windows of the greenhouse were always open till within an hour of sunset, so that every facility was offered for its escape, the little stranger regularly became visible after dark for ten or twelve evenings in succession, and was seen by many of the inhabitants of Swaffham, whose curiosity attracted them to the spot. I can only account for this circumstance by having lately received from Italy five or six orange-trees, the roots of which, being encased in balls of mould, might have afforded a shelter to the insect in its chrysalis state, subsequently developed into active existence by the heat of the greenhouse. May I beg to be informed through the pages of the 'Annals,' if the appearance of this insect in England be hitherto unrecorded? and any light which can be thrown on the subject will greatly oblige,

Gentlemen, your obedient servant,

JOHN DUGMORE, Jun.

OCCURRENCE OF RARE BRITISH BIRDS.

Phil. Hall, Leeds, Sept. 13, 1843.

The last week in July a specimen of the *Sterna anglica* (Gull-billed Tern) was brought alive to me which had been shot on the reservoir of a mill on the York Road, Leeds, a mature bird.

In May last a fine male Roller flew on board the Hamburgh steamer when about forty miles beyond Flamboro' Head, and was shot and brought to Leeds by my friend Mr. Thomas Stansfeld of this town.—HENRY DENNY.

CAPTURE OF A WOLF-FISH.

To the Editors of the Annals of Natural History.

Rooms of the Devon and Cornwall Natural History Society,
Plymouth, August 10, 1843.

GENTLEMEN,—I beg to inform you that a specimen of the Wolf-fish (*Anarrhicas lupus*) was captured off this port a few days since, and forwarded to me for presentation to this Society. The specimen in question is about three feet long; the stripes represented in "Yarrell" not very conspicuous, and the mark on the head less so; the teeth very large; the flesh very similar in appearance to veal,

Ann. & Mag. N. Hist. Vol. xii.

X

the skin very tough ; no ova or milt discoverable ; the stomach contained small crabs, *Pecten opercularis*, *Fusus corneus*, &c., all fractured by the conical and flat sets of teeth prior to being swallowed ; the containing viscus itself large and membranous ; the intestines short, but of large calibre. The fishermen who took it called it a " Cat-fish," evidently showing a previous acquaintance with it. This is however the first record of its capture on this coast, and Mr. Couch does not enumerate it as a Cornish species.

Can one of your correspondents tell me whether the male of *Lamna Cornubica* has a large stiff spine in the ventral fins, thereby distinguishing it from the other sex ?

I am, Gentlemen, your obedient servant,
J. C. BELLAMY, Curator.

Description of a " Blind Fish" from a Cave in Kentucky. By Jeffries Wyman, M.D.

The specimen from which the following description is drawn was presented to the Boston Society of Natural History by J. G. Anthony, Esq. of Cincinnati. It corresponds for the most part with the description of the *Amblyopsis spelæus*, described by Dr. Dekay in the ' Fauna of New York,' but in some particulars it differs.

The specimen here described was $4\frac{1}{10}$ inches long, and characterized by a broad vertically compressed head, covered with a whitish integument entirely destitute of scales ; but on it are seen numerous elevations or ridges, most abundant on the lateral portions, some of them intersecting each other at right angles. The lower jaw is more prominent than the upper ; no appearance of eyes ; nostrils double, the anterior ones tubular, the posterior nearly circular, about $\frac{1}{10}$ th of an inch behind the preceding. Both jaws are provided with folds of skin or lips ; intermaxillaries and lower jaw armed with minute slender and slightly recurved teeth, most abundant at a short distance from the median line—a group of teeth on palatines on each side ; also two groups in pharynx above and four below. Upper maxillaries concealed by integuments and destitute of teeth. Intermaxillaries form the borders of mouth above, and extend nearly to its angles. Branchial aperture large, branchiostegous rays six on each side.

Body covered with circular scales which terminate abruptly at the posterior limit of the head ; the scales are smaller on back than on the sides, and are so enveloped in the cuticle as not to present free edges. Lateral line occupies the middle of the lateral region ; commencing under the anterior extremity of the dorsal fin, passes directly backwards. First ray of dorsal a little posterior to the middle of body ; anal commences a little behind the dorsal ; abdominals very small.

Fin rays :—Pectoral, 10 ; dorsal, 10, first very minute ; caudal, 17 or 18 ; anal, 9 ; abdominal, 4.

Anus very far forwards, about $\frac{2}{10}$ ths of an inch behind the angle formed by the union of branchial membranes.

Alimentary canal ; entire length less than that of the body. *Cæso-phagus* very short ; stomach cylindrical, terminating posteriorly in a

short triangular cul-de-sac, the point of which reaches the posterior limit of the cavity of the abdomen. Stomach contracted, and mucous membrane thrown into longitudinal folds. Pylorus situated near posterior extremity of stomach; has a distinct valve which projects into cavity of duodenum; two short pyriform cæcal appendages open by distinct orifices on opposite sides of intestine. Mucous membrane of small intestine arranged in reticulated cells, which become less distinct towards termination. Length of small intestine $1\frac{1}{2}$ inch; of large intestine $\frac{1}{2}$ inch; the two separated by a distinct valve.

Liver consists of two lobes; left extending nearly whole length of abdominal cavity, right very short. Gall-bladder distinct.

Air-bladder cordiform, deeply cleft anteriorly.

Brain; from anterior extremity of olfactory lobes to posterior portion of cerebellum, $0\cdot2\frac{1}{4}$ inch. Olfactory lobes in contact with and just in front of cerebral hemisphere, of slightly pyriform shape, and giving off large olfactory nerves. Cerebral lobes nearly spherical, slightly compressed on median line, where the left and right unite. Optic lobes much smaller than preceding, and partly concealed by the cerebellum. Cerebellum nearly spherical, slightly divided on median line, giving it a somewhat cordiform appearance. Fourth ventricle completely exposed and widely open. Posterior pyramidal bodies distinct, projecting over the cavity of the ventricle near its middle. External to these last arise the branchio-gastric nerves. Auditory sacs large; ampullæ of semicircular canals containing otoliths, one of which is of a trapezoidal shape, and nearly equalling in size one of the cerebral hemispheres. The inferior optic lobes, "lobi inferiores," very small, not larger than a pin's head; in front of them rests the pituitary body. No optic nerve was found. Branchio-gastric and fifth pairs of nerves of the usual size.

Internally the nostrils consist of an ovoidal cavity $\frac{1}{10}$ th of an inch in longest diameter; olfactory membrane arranged in seven folds or digitations of unequal length, and radiating from a point in the anterior portion of the cavity. At the anterior extremity of this cavity is a small orifice opening into a blind sac or canal, which passes at first directly backwards and then ascends upon the upper surface of the cranium. On the most careful dissection no traces of eyes were found.

From the above description it appears that this fish, inhabiting a dark cavern, is reduced, as regards its organs of vision, to a much more imperfect condition than the *Proteus anguinus*, inhabiting the subterranean caverns of Illyria, or the common mole, in both of which eyes exist, although of a microscopic size. Dr. Dekay has placed this fish among the *Siluridæ*; though, as he distinctly states, only provisionally. The presence of scales and cæcal appendages to the pylorus, as well as the absence of cirrhi about the mouth, would seem to indicate feeble affinities with the *Siluridæ*. The parts entering into the composition of the brain, when compared with those of the *Pimelodus*, present many differences in the size and proportions. Its true affinities cannot be well determined until an opportunity shall be afforded by future dissections for the examination of its osteology.—

From *Silliman's American Journal*, July 1843.

On Fermentation. By Prof. E. MITSCHERLICH.

Fermentation is effected by a vegetable, putrefaction by an animal production. In the course of the two last winters the author observed in a large number of putrefying substances only one species of Infusoriium to be developed, which consisted of one or of several globules, in the latter case arranged in series; the diameter of such globules was about $0\cdot001^{\text{mm}}$, the motion vibratory. According to his observations it would seem probable that the other animalcules, which are observed in putrefying substances, have been conveyed into them by means of the atmosphere, insects, or some other means. A certain quantity of oxygen is requisite for the development and existence of these Vibriones, and the putrefactive process is dependent, according to the author, on the free access of a certain amount of atmosphere to the decaying substances. The maceration of vegetable substances in water, even when the temperature in the rooms is kept at a summer heat, appears to depend solely on these Vibriones, when the substances are employed in a clean state. During this process nitrogen is disengaged. These Vibriones are widely diffused in the intestinal canal throughout its entire course, in the cavity of the mouth, and in the stomach, of which it is very easy to be convinced by examining under the microscope the matter which collects or remains on the teeth; sometimes they are even found on the skin, but the author has hitherto not succeeded in detecting them in the blood, in the milk, in urine, in the gall, or in other fluids of this kind.

When a little sugar is added to the liquid in which these animals are formed, their number augments considerably, and at the same time a vegetable production is generated, viz. ferment. If a larger amount of sugar be added, the production of these animals is suspended or ceases entirely, and a greater quantity of ferment is formed. The author has never observed ferment to be formed in a liquid which contained no sugar. Whether a fungus be the fermentative fungus or another species, may be determined with certainty under the microscope; but also very easily by adding some of it to a solution of sugar, and observing whether any fermentation ensues. In a clear liquid, in which it is possible for ferment to be produced, a turbidness is first perceived, and under the microscope globules of various sizes, from the smallest dimensions hitherto observed up to a diameter of $0\cdot01^{\text{mm}}$. From day to day the small globules increase in size, and many new ones become apparent. In some liquids, as for instance in the juice of the grape, only a few individual globules are observed, which are generally of an oval form; and sometimes, but rarely, a second is developed at one of the extremities, but this never attains to the size of the primitive globule. Ferment which has been produced for some time by means of other ferment is otherwise circumstanced; from having been multiplied through a series of years it has acquired a constant character. In the breweries two kinds of ferment may be distinguished with certainty, the bottom ferment and the top ferment. The former multiplies at a tempera-

ture which must not exceed 48° , nor go below 32° Fahr.; this is the ferment in Bavarian beer. The most beautifully developed top ferment is that of Berlin white beer, which multiplies at a temperature of about 77° . Bottom ferment consists of single globules of various sizes. The author never observed a small globule to be formed on any part of a large one; the smaller globules are always diffused throughout the liquid. In top ferment scarcely ever could any single small globules be detected, but only large ones, at the extremities of which the smaller globules were developed, thus forming ramifications. These increase therefore by the production of gems; the bottom ferment, on the contrary, by small globules growing isolated in the liquid. The author exhibited drawings of the two species of ferment in the various periods of their development. In the older ferment an envelope and granular contents may be readily distinguished, which becomes however more evident on the addition of a drop of aqueous solution of iodine. By means of a compressorium invented by the author, the granular contents may be easily pressed out under the microscope. The author considers it probable that in the bottom ferment the globules burst and disburthen themselves of their contents, from each granule of which a new globule is developed, so that the bottom ferment would be multiplied by spores.

Substances which act as poisons on fungi destroy the action of ferment, for instance corrosive sublimate, and other substances of similar nature; but liquids which act most violently on the animal frame, such as tartar-emetic, in solutions of which fungi very readily develop, do not disturb the process of fermentation.

Several fungi which are known as vegetable diseases are similarly circumstanced, as for instance dry rot to woody fibre; and with these facts a new field is evidently opened, explanatory of the decompositions which the roots of plants are capable of effecting in the soil; and it may be expected that we shall be able to demonstrate by experiment, what general experience has shown, that the roots of plants, when unable to obtain from the atmosphere the substances requisite for their development, take them from the soil; and it is not improbable that the roots themselves effect the necessary decomposition of the substances contained in the soil, just as the greater portion of vegetables obtain the requisite substances for their first development from the seed itself. Although this is difficult to prove in the higher order of plants, it may be proved more definitely in the lower tribes, especially in the fungi, as for instance in the champignon. The process of fermentation is therefore of considerable interest. One of the most important chemical combinations is decomposed by a contact-substance, which contact-substance is an organized being belonging to the most simple forms, the development of which may be traced in the most easy and certain manner; but its first origin is moreover of great interest, for it is formed in a liquid in which it appears as numerous points so small as to escape observation.—Poggendorff's *Annalen*, No. 5 for 1843.

LETTERS FROM RAY TO SIR HANS SLOANE.
[MS. Sloan. Brit. Mus. 4056. fol. 225. *Orig.*]

Black Notley, April 13, 1700.

SIR,—Upon Reading your Letter of the 6th Instant I could not but be moved with indignation against those vile Rogues who, when they failed in their attempt of breaking open your House, were so malicious as to set it on fire. I congratulate with you your deliverance from so great a danger, and humbly thank God on your behalf.

The scurrilous Pamphlet entitled the *Transactioneer** I did always believe to be no better than you represent it.

And for Dr. Plukenet, I look upon him as an ill-natured man, and liable to mistakes, how ever confident and self-conceited he may be, that I say nothing of his unskilfulness and want of exactness in the Latine and Greek tongues. His arrogance and overweening opinion of himself and his performances appears by that hemistichium prefixt to his *Phytography*, *Nil nisi præmia desunt*. I doe not urge the sending me your Magellane-straits Plants. I am in no hast for them, but can well wait your leisure.

I did not expect so great and rich an addition to my Supplement of History as you tell me Dr. Sherard intends generously to contribute: in which respect it is well my Undertakers were so dilatory in beginning upon it. It will be greatly for the advantage of the Work if ever it comes to be published†. I should be very glad to see Dr. Sherard, and to have some conference with him, though loath I am he should put himself to the trouble and expense of such a journey for my sake. Please to give my service to him, and tell him so much.

* * * * *

Dr. Tournefort's *Institutions* may be of use to me as to the *Methodus Plantarum emendata*, which I have ready for the Presse, both for the correcting of some mistakes which possibly I may have committed, and the enlarging of it by new Observations.

I have done when I have told you that I am,

Sir, your very much obliged friend and humble servant,

JOHN RAY.

To his honoured friend Dr. Hans Sloane, &c.

His farewell before his death.

[*Ibid.* fol. 284. *Orig.*]

DEAR SIR,—The best of friends, these are to take a final leave of you as to this world. I look upon myself as a dying man. God requite your kindness expressed any ways towards me an hundred fold, blesse you with a confluence of all good things in this world, and eternall life and hapinesse here after. Grant us an happy meeting in heaven.

Sir, eternally yours,

B. Not. Jan. 7, 1704.

JOHN RAY.

When you happen to write to my singular friend Dr. Hotton, I

* 'The *Transactioneer*, with some of his Philosophical Fancies; in two Dialogues.' 8vo, Lond. 1700.

† The third volume, or 'Supplement of the *Historia Plantarum*,' was published shortly before Ray's death. Fol. Lond. 1704.